

Pest Alert

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WHEAT DISEASE UPDATE
SPRING PLANTINGS OF MILLETS CAN FAIL
WHITE-HEAD DIAGNOSTIC KEY
POTENTIAL FOR CORN DAMPING OFF AND SEED ROT EXISTS
WET WEATHER CAN BRING ON ALFALFA DISEASES

WHEAT DISEASE UPDATE

Ron Meyer (CSU Cooperative Extension, Burlington) reports that wheat in the Burlington area is in good shape. Ron reports some instances of barley yellow dwarf, no leaf rust and fairly wide spread occurrences of wheat streak mosaic virus. In at least one instance, in a field of Tomahawk, considerable yield loss is going to develop. Many fields that had earlier showed considerable yellowing, have now greened up with the increased soil temperature. We will see the same thing develop in the north part of the state as the temperatures increase and the plants become more active.

Thia Walker (CSU Russian Wheat Aphid Project) noted that there is a fair amount of wheat streak mosaic and several instances of barley yellow dwarf in the southeastern part of the state around Lamar. Little to no leaf rust or other fungal diseases are apparent in the area.

Bob Hammon (CSU Russian Wheat Aphid Project on the West Slope) reported earlier that he saw very high levels of wheat curl mite in his plots where he was trying to get build up but in the crop, planted much later, in general looks very good.

Virus infections in wheat have a wide range of effects, from those showing little to no symptoms (latent) to many that are killers. Depending on the virus, symptoms in wheat can range from discoloration, yellow to purple/reddish, stunting, curling, mosaics and necrosis. It is also possible to find more than one virus in the same plant and thus give a more complex reaction.

Viruses in wheat in Colorado can be spread by aphids (i.e., barley yellow dwarf virus), mites (i.e., wheat streak mosaic virus, Agropyron mosaic virus and the new High Plains Virus) and even fungi (soil-borne mosaic virus). The level of infection generally depends on the presence and activity of the vectors.

Prior to 1950 reports of viruses in wheat were rare, even though much was known about viruses in other plants. Currently there are at least 30 different viruses known to be associated with wheat. It is probable that even more exist because generally the wheat viruses have been overlooked or

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confused with non-parasitic conditions such as wet feet and nitrogen deficiencies. Some other wheat problems resemble virus symptoms but have unknown causes.

There are at least 5 distinct viruses attacking wheat in Colorado, barley yellow dwarf virus (BYDV), wheat streak mosaic virus (WSMV) Agropyron mosaic virus (AMV) wheat soil borne mosaic virus (WSBMV), and High Plains Disease (HPV).

AMV was first reported in Colorado in 1991 in the Front Range near Longmont. Since then we have found it wide spread throughout eastern Colorado and in the NW of the state. It appears to have very little impact on yield or quality of the wheat.

WSBM has been found in both the NW of the state and on the eastern slope. Add to these the new High Plains virus and it makes it very difficult at times to determine just which virus is the problem. In several instances we find that a single wheat plant will also have more than one virus at the same time.

The table on the following page provides some guidelines to differentiate wheat streak mosaic from barley yellow dwarf the two viruses of greatest importance in Colorado wheat. Some day I am going to get a page long enough or print small enough to do all 5 side viruses side by side. But about the time I get that done we will find number six!

It is worth noting that where we are seeing the higher instances of wheat streak mosaic is in association with volunteer wheat fields and/or next to dryland corn. In the south eastern part of the state the increased trend of many growers to plant their wheat earlier for grazing is also an important factor in the development of wheat streak mosaic and its wheat curl mite vector. As most of you know the wheat streak mosaic virus has to have a living host, either the wheat curl mite vector or the wheat host. Other hosts are barley, corn, rye, oats and a number of grasses. Sorghum has been shown to be a host as well, but occurrence under natural conditions is fairly infrequent.

With the increase in dryland corn growing there is a potential for an increase in wheat streak mosaic in the winter wheat crop. A problem arises in that while many corn varieties do not show wheat streak mosaic symptoms, they can still serve as reservoirs for the virus and the wheat curl mite vector. We will only know with time if this is going to be a major problem or if the wheat streak resistance available in some wheat varieties will be sufficient to manage this potential problem.

There should be no leaf rust problem this season and thus no fungicide needed. With heading beginning where there is some Cephalosporium stripe and root rot we will see some white-head development in fields. The white-head key that follows on page 4 was originally developed by Bill Willis in Kansas. I adapted it to help to identify problems in Colorado. (Brown)

SPRING PLANTINGS OF MILLETS CAN FAIL

A couple of years ago we had a lot of rain in late May and early June and many properly planted millet fields suffered severe seedling rot and damping off. With prolonged wet weather we could see severe seedling diseases. Most millet fields are planted with seed that has not been treated with a fungicide and as a result damping off caused by *Pythium* species has caused planting failures in the past.

COMPARISON OF WHEAT STREAK MOSAIC AND BARLEY YELLOW DWARF

	<u>WHEAT STREAK MOSAIC</u>	<u>BARLEY YELLOW DWARF</u>
WHEN SYMPTOMS APEAR	4-6 weeks after spring growth begins. On volunteer in fall.	6-8 weeks after spring growth begins
PATTERN IN FIELD	Most intense along edge near volunteer wheat and diminishing with distance. Spread in the direction of prevailing wind.	Random circular spots of 2-6 feet in diameter.
STUNTING	Severe and persists to maturity.	Some-often most severe in center of spots.
LEAF MOTTLING AND COLOR	Bright yellow with streaked pattern. Mosaic most prominent on upper leaves.	Leaf tips bright yellow or reddish-purple. Flag leaf symptoms most prominent.
OTHER SYMPTOMS	Prostrate tillers. Curling and trapping of leaves. Wilted, Poor roots.	Increased winter-kill. Blackened glumes. Poor roots.
TEMPERATURE EFFECTS	Symptoms increase as weather warms.	Cool-more reddish purple. Warm-more yellow.
VECTORS	Wheat curl mite.	Several aphids. <u>Not</u> Russian wheat aphid.
SOURCE OF VIRUS	Early volunteer wheat and some grasses.	Many native and introduced grasses.
CONDITIONS FAVORING DISEASE	Early volunteer from hail at harvest. Volunteer left until after seeded wheat emerges. Warm fall.	Many aphids in fall and a cool spring. Warm fall.
WHERE SERIOUS	Most severe in Eastern Colorado but confirmed on western slope	Erratic, widespread on both sides of mountains.
CONTROL	Destroy volunteer and late planting.	Late planting.

Spring Planting of Millets can Fail cont...

This problem is readily controlled through rotation, appropriate seed treatment and planting time. Metalaxyl (Apron XL LS, Norvartis) is labeled for millet as a seed treatment and should be considered if the present wet weather continues into June, or for any late replanting that may take place after turning under a poor wheat stand if wet weather continues.

Under normal (there's that word again) Colorado high plains conditions the use of Apron would probably not be justified. If problems getting the millet crop going this spring develop I would like to know about it. (Brown).

WHITE-HEAD DIAGNOSTIC KEY	
1. Awn tips white and sometimes bent.....	Frost or Freeze
2. Part of the head dead: neck still green	
a. Dead parts white to gray.....	Frost or Freeze
b. Dead parts (sometimes whole head) pink.....	Scab
3. Head and neck dead down to the top node with the rest of plant green. Pull head out and examine for chewing or maggots above the top node.....	Stem Maggot
4. Single tillers with white heads	
a. Lodging Not Common	
1) Vascular discoloration evident in stripe in leaves and/or nodes.....	Cephalosporium
2) Lens shaped lesions on the lower internode.....	Sharp Eyespot
b. Lodging Common	
1) Small pupa under leaf sheath above node.....	Hessian Fly
2) Grayish lesion on lower internode with the stem collapsed, bent or broken in the middle of the lesion.....	Strawbreaker
5. All tillers die at the same time – no lodging	
a. Stem pulls out easily. Roots, crown are black, subcrown internode sometimes shiny black also	Take-all
b. Does not pull out easily. Crown and lower internode medium brown.....	Common Root Rot
6. Plant dying, leaves rolling and/or purpling but none of the above....	Poor Roots, Drought, Drowning, Hot Winds or Russian Wheat Aphid

(Brown)

POTENTIAL FOR CORN DAMPING OFF AND SEED ROT EXISTS

Cold wet soil is very favorable for seed rot and damping off. Corn planting in the northeast of the state in many instances has been delayed. Continued rain resulting in damp solid raises the risk of damping off and seed rot as a problem. While seed treatments will help, if the current weather continues the effectiveness of the seed treatments will wear out. The thiram, captan and other materials used for corn seed treatments are surface protectants and not absorbed into the seed. Therefore they are eventually diluted away from the seed and protection decreased.

While there is very little that can be done now, it will be helpful where corn is already planted or being planted, as soon as growers can see their rows and if it is not too wet, cultivate and loosen the soil to increase aeration and get some drying. (Brown)

WET WEATHER CAN BRING ON ALFALFA DISEASES

While we seldom have leaf disease problems on alfalfa, they are present and in an extended wet season like we are having can become a problem. In addition to spring black stem which is showing now, it is probable that downy mildew and angular leaf spot will also develop. Reports from the Arkansas River Valley are noting high stem nematode activity in the first cutting growth. Bob Hammon (CSU Russian Wheat Aphid Project, West Slope) reports that stem nematode populations are also very high in the southwest part of the state in irrigated alfalfa. Much of this is probably in part the result of the mild winter that allowed the nematode to remain active and populations increase.

Spring black stem- The fungus first shows as small black spots on leaves, petioles and the stems of new alfalfa shoots. The leaf spots are irregular and enlarge and merge until much of the leaflet is covered. The infected leaves turn yellow and defoliation results. Stem lesions also develop and enlarge, sometimes girdling the stem. The fungus survives on the stem and fallen leaves.

Downy mildew- This fungus is dependent on extended wet and cool weather for development. It is seldom a problem but can usually be found on the first cutting growth. The fungus shows as yellowish blotches on the tops of the leaves. If the underside of leaf is examined in the early to mid morning a grayish downy fungus can be seen associated with the blotches. Such downy mildew fungi are host specific, only develop the fungus structures at night and must be examined before the foliage dries. The fungus survives systemically in alfalfa crown buds and stems.

Bacterial leaf spot- This leaf spot is caused by a bacteria that first appear as small, chlorotic spots with angular irregular water-soaked spots developing. Under favorable conditions (rainy weather) the leaf spots then can enlarge but continue to have a chlorotic margin. Centers of the leaf spots can dry up but often retain a shiny dried exudate. The spots eventually become tan and clear. The bacteria can survive for long periods in the soil associated with alfalfa debris and hay.

Management-

There are resistant varieties for each of these diseases but the diseases are not important enough to justify variety selection for their control as a high priority. Fields should be scouted and if any of these problems develop early cutting should be initiated. This will allow: a) getting the leaves in the bale instead of on the ground and b) help to reduce potential inoculum from the field. Fungicides are not recommended. (Brown)

CONTRIBUTORS

K. George Beck, Extension Weed Specialist, Perennial and Range (970) 491-7568;
gbeck@lamar.colostate.edu

William M. Brown, Extension Plant Pathologist, IPM and General (970) 491-6470 ;
wbrown@ceres.agsci.colostate.edu

Whitney S. Cranshaw, Extension Entomologist, Urban and Horticulture (970) 491-6781;
wcransha@ceres.agsci.colostate.edu

Sandra McDonald, Extension Specialist, Environmental and Pesticide Education (970) 491-6027; smcdonal@lamar.colostate.edu

Scott J. Nissen, Extension Weed Specialist, Row Crops (970) 491-3489;
snissen@lamar.colostate.edu

Frank B. Peairs, Extension Entomologist, Field Crops (970) 491-5945;
fbpeairs@lamar.colostate.edu

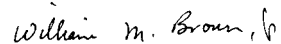
Howard F. Schwartz, Extension Plant Pathologist, Row and Vegetable Crops (970) 491-6987; hfspp@lamar.colostate.edu

Linnea G. Skoglund, Extension Plant Clinic Specialist, (970) 491-4888, Plant Clinic (970) 491-6950; skoglund@lamar.colostate.edu

Philip H. Westra, Extension Weed Specialist, Row Crops (970) 491-5219;
pwestra@ceres.agsci.colostate.edu

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Sincerely,


William M. Brown, Jr.
Extension Plant Pathologist